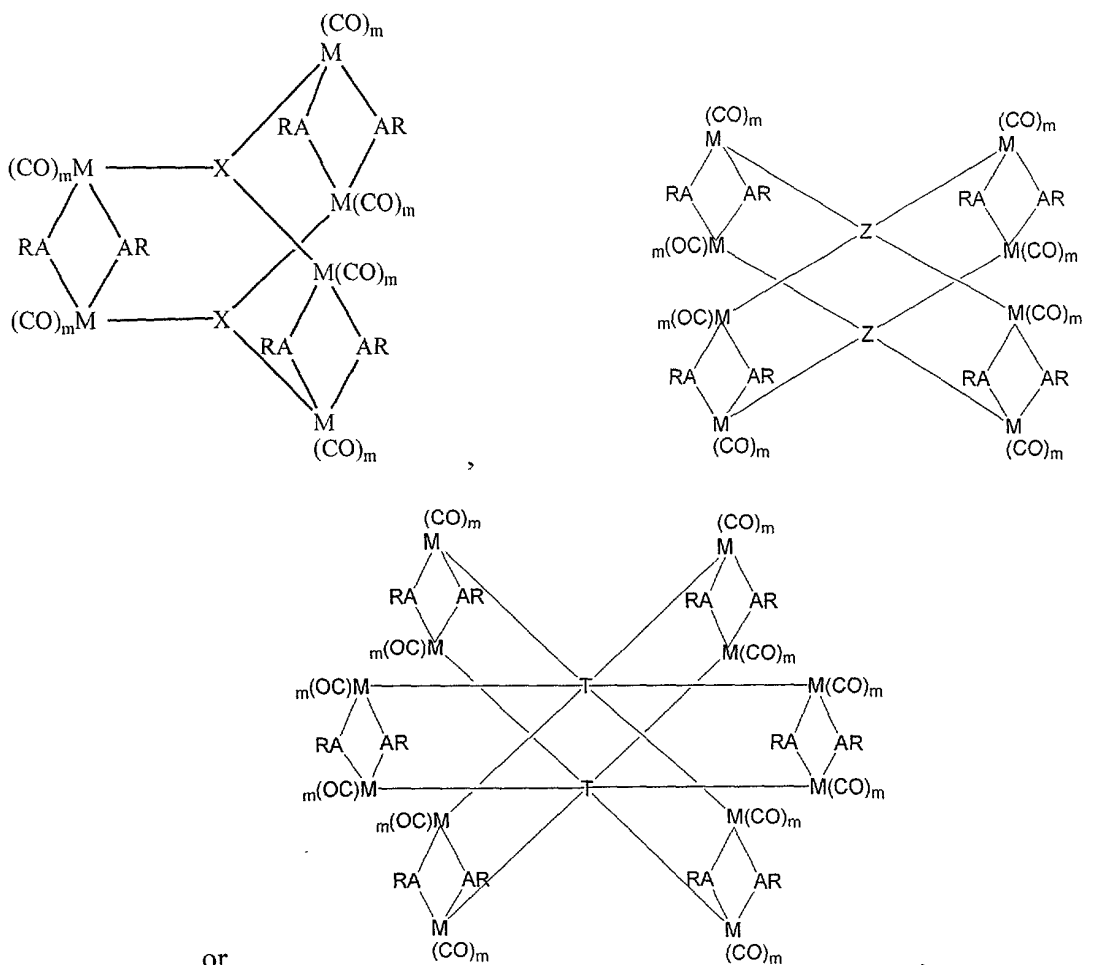


ABSTRACT

This invention features a supramolecule having the following structures:



- 5 M is a transition metal atom that is rhenium (Re), manganese (Mn), chromium (Cr), molybdenum (Mo), tungsten (W), iron (Fe), ruthenium (Ru), or osmium (Os); X is a nitrogen-based tridentate ligand; Z is a nitrogen-based tetradentate ligand; T is a nitrogen-based hexadentate ligand; A is O, S, Se, or Te; R is $C_1\sim C_{16}$ alkyl, $(CH_2)_n$ -aryl, or $(CH_2)_n$ -aryl-(O- $C_1\sim C_{16}$ alkyl) $_p$, in which n is 0-15, p is 1-3; and m is 1, 2, 3, 4, or 5.